

Concentration and Aquatic Toxicity of RIFA Insecticides and Other Organophosphates in Surface Water

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Outline

- Introduction
- Monitoring
- Irrigation Runoff vs. Storm Runoff
- Urban vs. Nurseries
- Regulatory Approach
- Runoff mitigations
- Conclusions

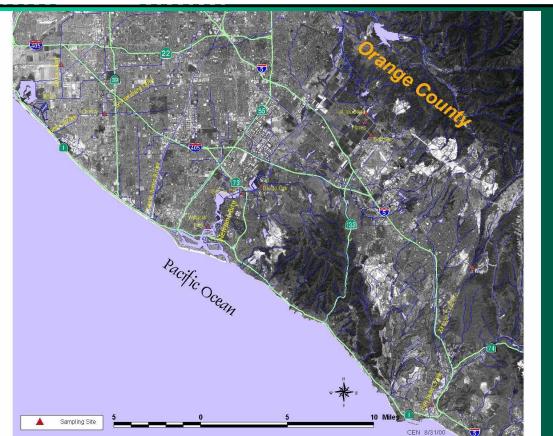
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The Insecticides

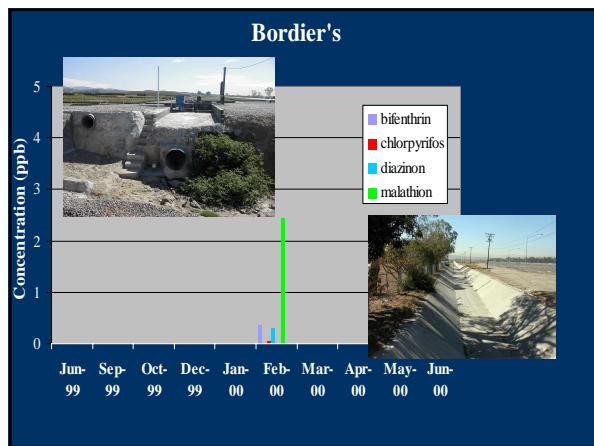
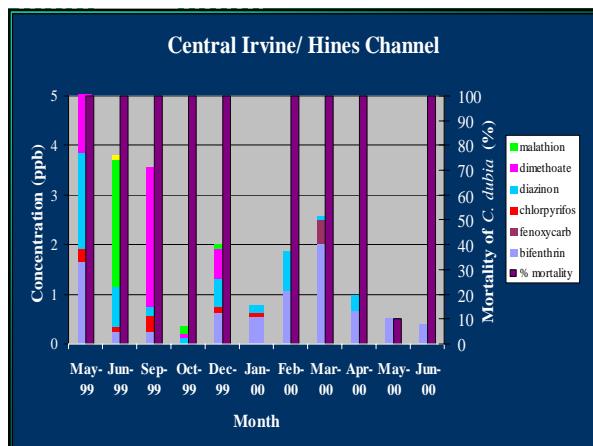
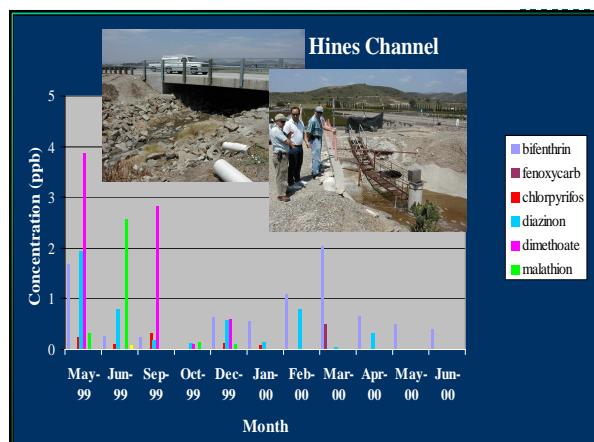
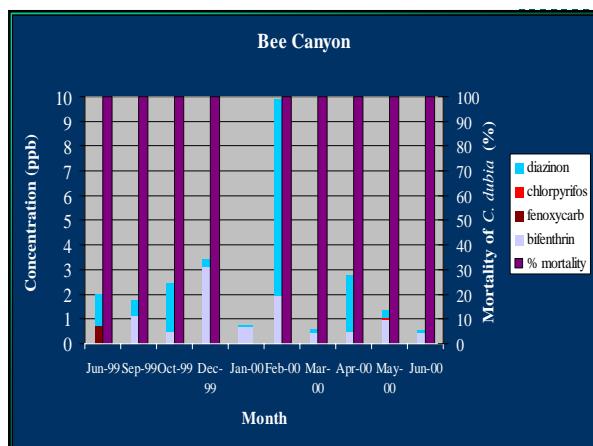
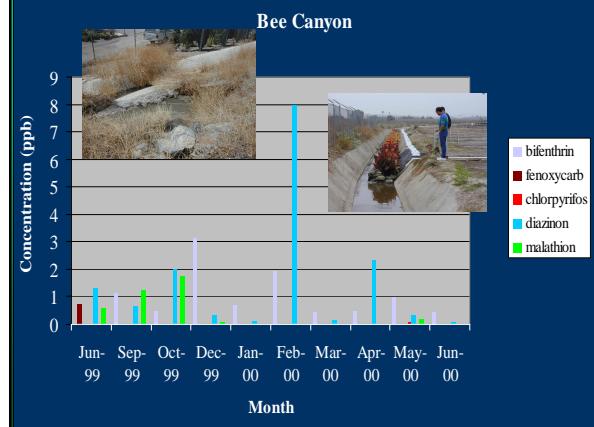
- Bifenthrin (Talstar®)
- Chlorpyrifos (Dursban®)
- Fenoxy carb (Award®)
- Hydramethylnon (Amdro®)
- Pyriproxyfen (Distance®)
- Diazinon

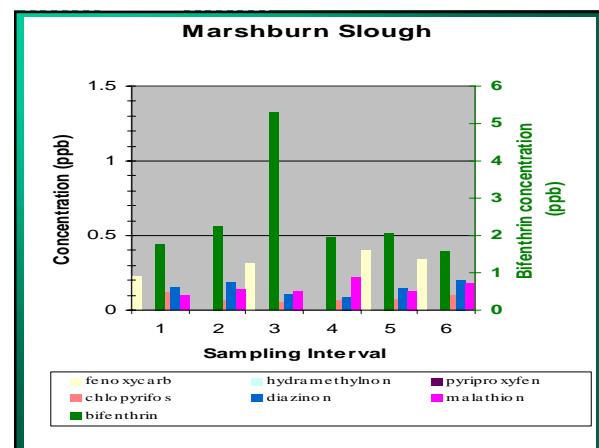
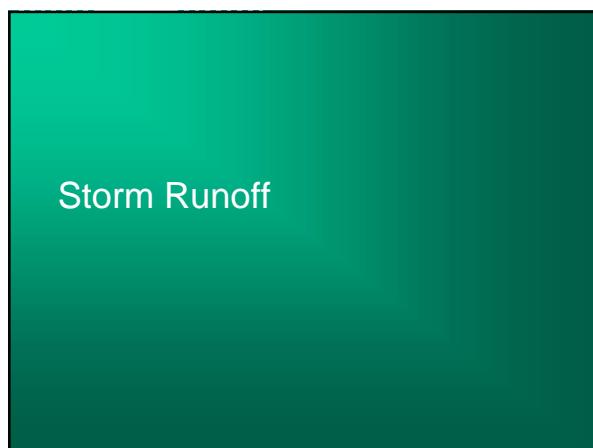
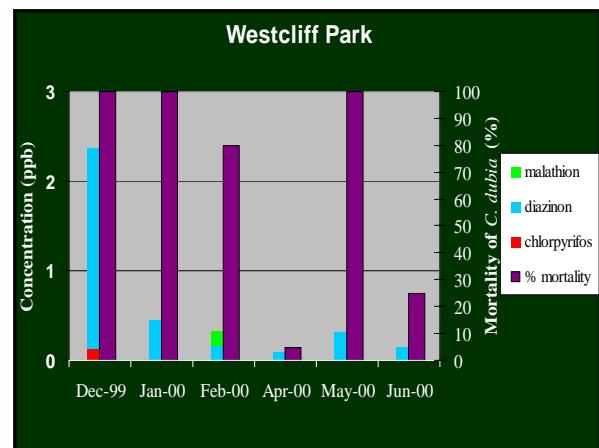
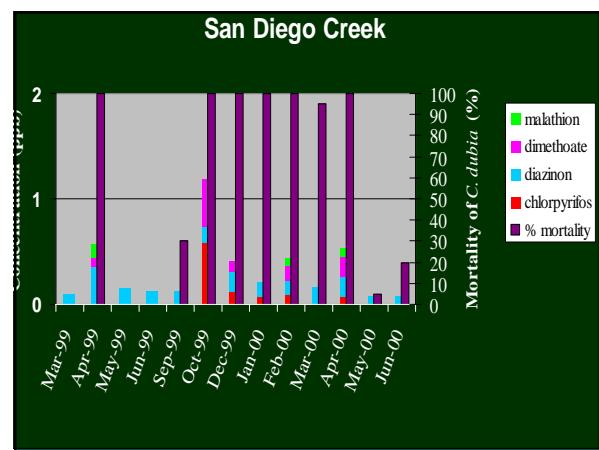
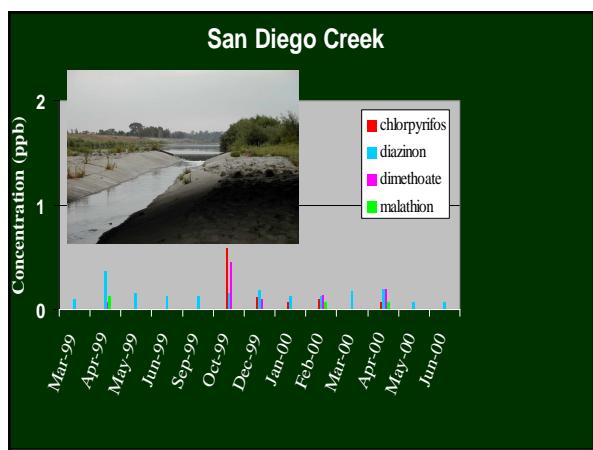
Aquatic Toxicity (LC50 ppb)

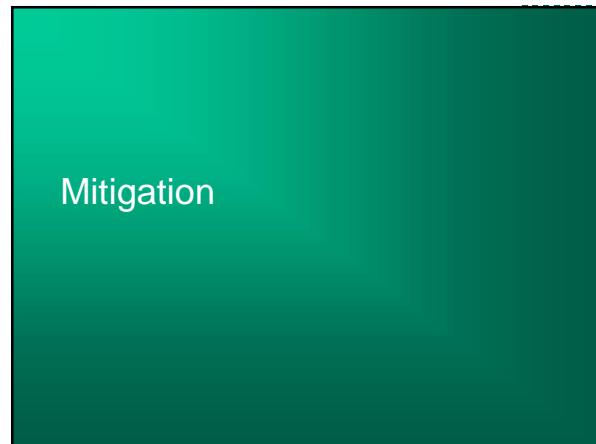
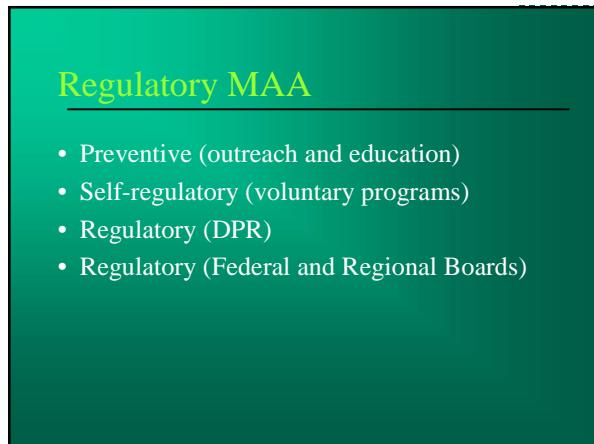
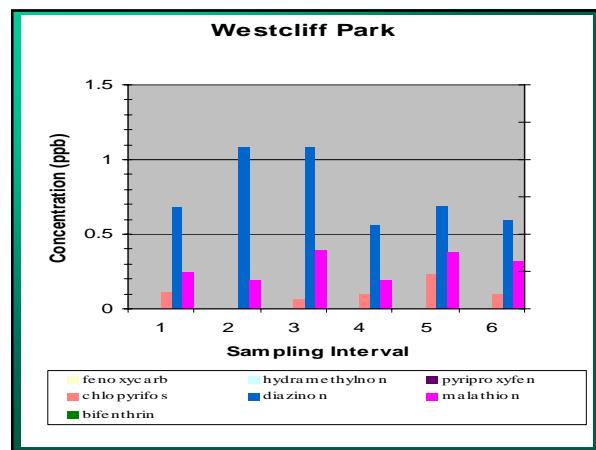
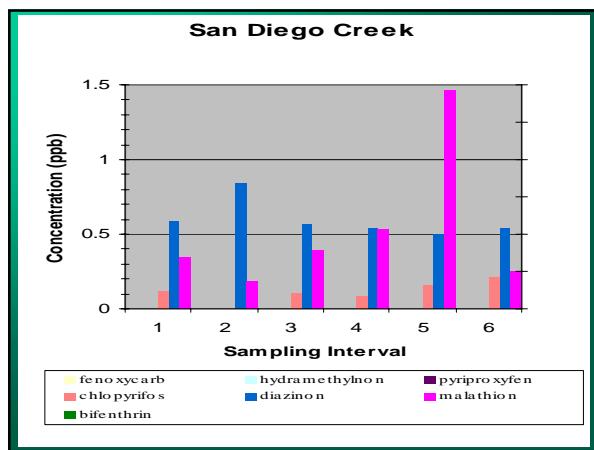
Chemical	R. Trout	D. magna	C. dubia
Bifenthrin	0.15	0.16	na
Chlorpyrifos	3	1.7	0.13
Diazinon	2600	0.96	0.51
Fenoxy carb	1600	400	na
Hydramethylnon	160	1140	na
Malathion	170	1.8	1.14
Pyriproxyfen	>325	400	na



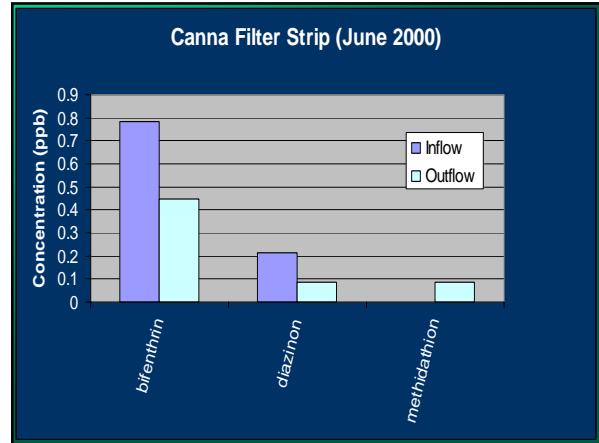
Irrigation Runoff











Conclusions

Detections: Irrigation Runoff

- Single detect: hydramethylnon, pyriproxyfen
- Nursery: Bifenthrin, Diazinon, Chlorpyrifos, Malathion, Dimethoate <8 ppb
- Urban: Diazinon, Malathion, Chlorpyrifos, Dimethoate <1.5 ppb

Detections: Storm Runoff

- Nursery
 - bifenthrin, diazinon, malathion, chlorpyrifos, fenoxy carb <6 ppb
- Urban
 - diazinon, malathion, chlorpyrifos <1.5 ppb

Toxicity: Irrigation Runoff

- Nursery sites:
 - 18: Bifenthrin, Diazinon, Chlorpyrifos, Malathion
 - 1 unknown
 - 2 non toxic
- Urban and integrated sites:
 - 27: Diazinon, Malathion, Chlorpyrifos
 - 27 unknown
 - 21 non toxic

Toxicity: Storm Runoff

- Nursery
 - All 18 samples 100% mortality
 - Bifenthrin, Diazinon, Malathion, Chlorpyrifos
- Urban
 - All 18 samples 100% mortality
 - Diazinon, Malathion, Chlorpyrifos
 - Unknown

Prevention & Mitigation

Insecticide Application
Irrigation Management
Water Recovery
Holding Pond
Buffer Strip

Acknowledgments

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El Modeno Gardens
Flines Nursery

